

ABSTRACT OF THE DISCLOSURE

A method of manufacturing a semiconductor device is disclosed wherein a WSiN layer is deposited in a contact hole as a barrier metal using an ALD process. A tungsten layer is deposited on the WSiN layer in the nucleation stage thereof. Then, using a CVD process, the contact hole is completely filled with a tungsten layer. The WSiN layer is continuously and uniformly deposited in the contact hole having high aspect ratio, and the tungsten layer in the nucleation stage can be continuously and uniformly deposited on the WSiN layer, thus completely filling the contact hole with a tungsten layer deposited by the CVD process.